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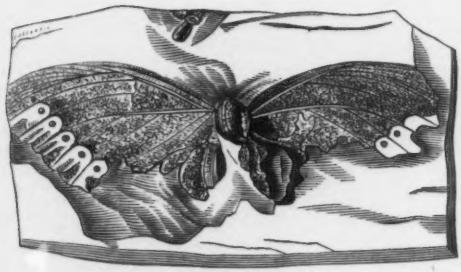
Entomological News



ARGYNNIS PLUTO.
(Fossil butterfly)

SEPTEMBER, 1898.

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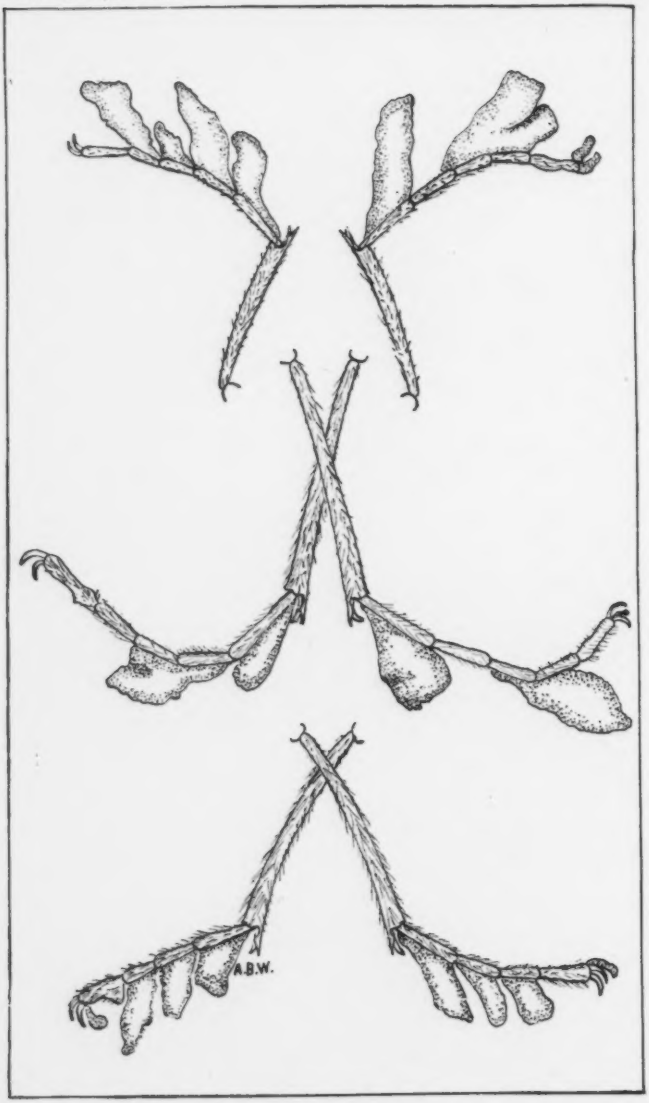

AN INSECT MONSTROSITY.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. IX. SEPTEMBER, 1898. No. 7.

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AN INSECT MONSTROSITY.

By A. B. WOLCOTT.

The figures given this month (Pl. X) are drawn from a specimen of *Epicauta cinerea* Forst taken at Heyworth, Ill., early in August and now in my collection at the Illinois Wesleyan University.

This beetle was crawling on a board-walk when first observed and its gait was extremely awkward and grotesque. The irregular masses shown extending from the joints of tarsi are thickened considerably externally, somewhat granular and fully chitinized; they are of a light gray color. Where these masses extend from one joint to another they cause that joint to be rigid; several of the tarsal joints and claws are also deformed. With the exception of the tarsi the specimen is normal. The figures will give a better idea of this monstrosity than many words; the different members are placed in the same position as they occupied in life, those at the top of the plate being the anterior feet.

Mr. LANCASTER THOMAS will make further onslaughts on the Lepidoptera of Cranberry, N. C. *Argynnis diana* is an old friend of his, and he always manages to get some fine examples.

A SETTING-BLOCK FOR LEPIDOPTERA.

By HERMANN SCHWARZ, St. Louis, Mo.

Being aware of the difficulty which presents itself to almost every collector of Lepidoptera in finding a suitable block or board on which to spread his specimens, I herewith take pleasure in

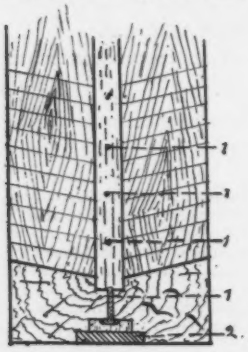


Fig. I.

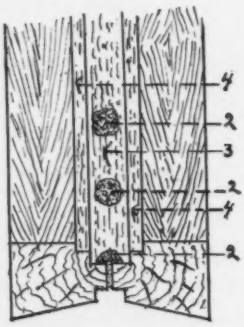


Fig. II

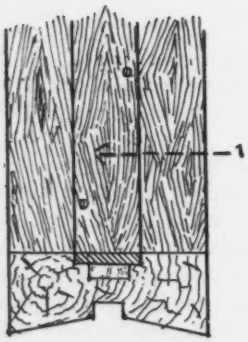


Fig. III.

H. Schwarz.

presenting a sketch of a block which I have found to answer the purpose to perfection.

Fig. I shows a cross-section and top of the block. As will

be readily seen, the groove for the reception of the bodies of the specimens forms the center; 1 shows the gimlet hole through which the pin passes; 2 is end of strip of wood to be placed at the bottom, as can be better seen in Fig. III, 1.

Fig. II represents the block with bottom open, showing the anatomy as it were. A groove a bit wider than the top one is cut directly underneath it, 3. Another groove yet wider than the last is cut as shown at 4; 2 are very thin pieces of cork about $\frac{1}{16}$ inch. thick glued over the gimlet holes.

Fig. III shows the block with bottom closed, that is to say with strip of wood, 1, placed in position. The block should be made of soft wood, such as poplar or basswood. By drawing parallel lines about $\frac{1}{4}$ inch. apart across the block, as shown in Fig. I, the wings can be set even with greater exactness.

———o———

LIFE-HISTORY OF PAMPHILA ETHLIUS Cr.

By HARRISON G. DYAR.

Mrs. Slosson called my attention to some Hesperid larvæ that were eating the leaves of *Canna* planted in the grounds of the Hotel Royal Palm at Miami, Fla. They were numerous, and at some points had considerably injured the appearance of the plants. We concluded that they must be *P. ethlius*, which proved to be the case. Mrs. Slosson asked me to describe them, and, with the help of Dr. Prime, I found all the stages, thus avoiding the necessity of slow breeding. The larva is the most transparent that I have seen.

Egg.—Singly, scattered on either side of the leaf; almost perfectly hemispherical, like a *Notodontian;* white, opaque, not shining, with a delicate under tint of green, which gives place later to reddish. Surface minutely and densely white granular as in *nadata;* micropyle punctiform, depressed. Diameter 1 mm.; height .6 mm.

Stage I.—Forms two incisions in the edge of the leaf and bends over the included part by threads. Head rounded conic, black-brown, shining, not notched; width .55 mm. Joint 2 rather small, with a narrow, black, cervical shield. All else whitish translucent, green from the food; spiracle of joint 12 large and conspicuous, whitish. Skin dull, not shining; setæ not seen with

a lens, scarcely under a half inch objective, but iv and v were made out as very rudimentary hairs in line and remote, simple, sharp pointed, not glandular.

Stage II.—Rests in a portion of the leaf folded back. Head subconic, tapering above, with small vertical notch; clypeus reaching half way to vertex with side pieces; smooth, dark brown, the color reticulated, enclosing pale translucent dots; width 1 mm. Joint 2 small; a narrow, black, transverse, cervical shield. Body moderately thick, a little flattened behind, tapering before to joint 2; a subventral ridge; segments with five annulets posteriorly. All very minutely and obscurely dark pilose. No anal plate, but a subdorsal paired dark seta. Transparent, no color, food green, tracheæ whitish, distinct, their ramifications plainly showing. Venter not different; thoracic feet small, black.

Stage III.—Head dark brown, finely reticulated; width 1.4 mm. Body as before, the minute pile dark. Skin transparent, the appearance dark green from the food; spiracles conspicuous, a little elevated. Head small, cervical shield narrow, black; anal plate concolorous with body. Length 10 mm.

Stage IV.—Head very small in proportion, 2.2 mm. wide, the larva over 30 mm. long; head high, narrowing above, slightly notched, pilose, dull glaucous brown, somewhat shining, the pile obscure. Body thick, tapering before and more abruptly behind, segments 7- or 8-annulate, annulet 1 very large; slightly shining, minutely black pilose, the pile from little black tubercles. Cervical shield narrow, transverse, black; prespiracular tubercle black, a white spot below it. Thoracic feet small, black; anal plate thickened into a low pod, not pigmented. Body perfectly transparent, stomach within dark green; edges of dorsal vessel, sex glands (in ♂) and tracheæ yellowish white, the spiracle on joint 12 with dense radiating tracheæ; subventral ridge and feet a little whitish, but no fat granules or any pigment. Appearance blackish green, but wholly from food and blood.

Stage V.—Head rounded triangular, notched at vertex, small; white, caramel tinted, brownish at apex, a triangular black spot in apex of clypeus, a rounded spot on ocelli and jaws black; not shining, a little shagreened, pile obsolescent; width 3.6 mm. Body very large and thick, 50 mm. long, flattened at the large concolorous plate, tapering before to joint 2. Cervical shield obsolete, except a black dot at each side; spiracles large, white,

especially the one on joint 2. Thoracic feet of joint 2 black, the others white. Segments annulate behind, pile small, obsolescent, tubercles whitish. Very transparent, the blood watery, the food in the stomach dark green. Stomach, dorsal vessel, tracheæ of both skin and stomach, sex glands (the ♂ elliptical, subdorsal, situated in joint 9, the ♀ a slender oblique cord in joint 10) and the internal organs in general all plainly visible. A diffuse white subdorsal stripe of pigment on the skin; subventral fold narrowly whitish. A nearly white patch on each side ventrally of joints 11–12. Spiracle of joint 12 a little higher up than the rest, with short, densely radiating tracheæ; edge of joint 13 pilose, pale. The larva lives in one or more leaves united by silk.

Pupa.—Formed in the resting place of the larva, held by a transverse loop and a band of silk for the cremaster. The cremastral band is attached at one end to the leaf, at the other to a transverse thread. Pupa slender, cylindrical, a little thickest through mesothorax, last two segments tapering. Eyes large, prominent; a long, thick horn arising between them, recurved a little at the tip. Cases reaching the third abdominal segment, a long slender tongue-case reaching back 21 mm., or 5 mm. beyond the end of the cremaster. Legs of segments 4–6 represented by little patches of corneous scales. Three moveable incisures. Cremaster long, hollowed below at base with many terminal hooks. Pale green with white bloom, a curved blackish bar between the eyes; horn dark red; a set of black dots on abdomen in the normal position of tubercles i, ii and v of larva, a pair of dots on prothorax and one on metathorax subdorsally. Exactly, the abdominal black dots are thus: seg. 1, tubercle ii; segs. 2 and 3, tubercles i and ii; segs. 4–6, tubercles i, ii and v; seg. 7, tubercles i and ii; seg. 8, tubercle ii, this spiracle obsolete, represented by a scar; no tubercles behind seg. 8. Skin finely wrinkled, shagreened. Dimensions 40 x 7.5 mm.; length of horn 3 mm.

———o———

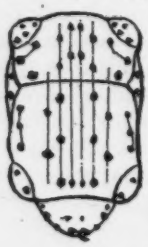
A THIRD AMERICAN SPECIES OF CYNOMYIA.

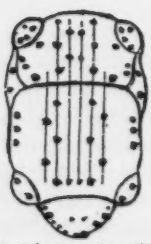
By GARRY DE N. HOUGH, M.D.

In the ENTOMOLOGICAL NEWS for May, 1898, I described two new American species of *Cynomyia*. In a small collection of Muscidæ made by Mr. Trevor Kincaid on St. Paul's Island,

Alaska, last Summer, I found a third species, whose description follows:

Cynomyia hirta nov. sp.; one male and one female. In size, color and proportions this species resembles very closely *Cynomyia mortuorum* Linn. The male differs from *mortuorum:* (1) by its much longer and denser coating of hair on the thorax, abdomen and legs, and (2) by the much smaller size of the two terminal chitinous hooks of the hypopygium. The female may be distinguished from that of *mortuorum* (1) by having four instead of three macrochætæ in the lateral row of the flexor surface of the hind tibiæ and (2) by the discal macrochætæ of the fourth abdominal segment being stouter and more numerous.





Chætotaxy . . . That of the female differs from the normal chætotaxy of *Cynomyia americana* only in two points: (1) it has but two dorso-centrals in front of the transverse suture, and (2) it has but one achrostichal behind the suture. The thoracal macrochætæ of the male are more slender than in the other species of *Cynomyia* that I have seen, and this with the unusual length and density of the hair makes the chætotaxy of the male rather difficult to see. It does not, however, differ from that of the female except in having (1) an additional posthumeral macrochæta laterad the presutural, (2) a very delicate third anterior dorso central, and (3) what is evidently an individual abnormality, viz., the presence of three marginal scutellar macrochætæ on the left side, while on the right side there is but one, as in the female.

I think it highly probable that the chætotaxy of the male will be found quite variable, because of its long, thick coating of hair, for in other Muscidæ, under similar conditions, I have usually found it variable.

Some Characteristic Maritime Diptera from the South end of Padre Island, and the Adjacent Texas Coast.—I.

By C. H. TYLER TOWNSEND.

In the Summer of 1895, during the month of June, the writer collected a few insects on the south end of Padre Island, which was visited on several occasions. This island belongs to the *Antillean* province, and to that fauna which should be known as the *Mexican Maritime*. The Diptera, especially, which occur here, bear a characteristic appearance indicative of the conditions of environment which surround them. They are mostly of a whitish or gray color, thus assimilating well with the stretches of sandy beach which they frequent. Some interesting species were collected here, as well as on the beach of the mainland.

TABANIDÆ.

1. **Tabanus maritimus** n. sp.—Length 10–10.5 mm. Differs from *T. psammophilus* O. S. as follows: Face gray, with white hairs; palpi white; first two antennal joints pale yellowish, the third brownish with annulate portion darker. Thorax black, clothed with white hairs, and with three grayish white pollinose vittæ. Abdomen evenly tapering to tip, blackish, hind edges of segments whitish yellow, the whole thickly clothed with a soft white pubescence. Legs pale yellowish, tips of tibiæ slightly brownish, tarsi hardly so. Wings whitish, the stump of a vein near origin of upper branch of third vein is well marked in two of the specimens, being as long as the basal section of the branch, but in the other it is exceedingly short and barely perceptible; posterior cells all open, none of them narrowed; halteres whitish yellow. Difference between the large and small facets of the eye is not marked, being gradual and slight, and the small facets cover an extensive area along posterior orbit, the large facets being confined to the inner central portion of the eye. In life this species presents a uniformly white appearance, being almost exactly the color of the sand and drift-wood upon which it habitually rests.

Three males, June 29, 1895, on logs and sand on beach, at south end of Padre Island, Texas.

T. psammophilus was taken by Hubbard and Schwarz on the sea-beach of the Florida coast, at Fort Capron. Mrs. Slosson has recently taken it at Lake Worth, Florida (det. Johnson).

It is quite possible that *T. nanus* Mcq., described from Texas, is identical with the present species. But should this be the case, the name *nanus* is preoccupied, as already pointed out by Osten Sacken, and cannot be retained. The size, 4 lines (= 8 mm.), more nearly coincides with the present specimens than with

psammophilus. The present species is certainly distinct from *psammophilus* in the character of the facets of the eye in the ♂, as well as in the other points mentioned. It should be stated that there is no distinct process at base of third antennal joint, there being nothing more than a slight swelling which hardly affects the symmetry of the basal portion.

EPHYDRIDÆ.

2. **Lipochæta texensis** n. sp.—Length 3 to slightly over 4 mm. Differs from the description of *L. slossonæ* Coq. as follows: Head is even broader than thorax. Clypeus projecting fully the length of face. Front nearly as wide as oral opening in one specimen, in the other somewhat narrower; scutellum in one specimen one-third, in the other fully one-half as long as thorax. Claws are distinct, slender, and a little elongate, but not large or stout. The third and fourth veins converge toward their tips, but not strongly so. This fly may prove to be inseparable specifically from *slossonæ*, but it will at least form a good variety, from its larger size, longer scutellum, etc.

Two specimens, June 8, 1895. Taken on moist beach at south end of Padre Island.

This is a sleek, densely whitish-pollinose, glossy ephydrid, of a very peculiar aspect. It occurred in large numbers on stretches of moist beach on the south end of Padre Island. The specimens were taken and observed just after a rain, and while a heavy wind was blowing. They flew up in numbers as one approached, but rose only an inch or so from the sand. The whole insect, save for the dorsal brownish pollinose portion, presents a marked whitish appearance, including the wings, so that it is very difficult to detect it when alighted on the moist sand of the beach, the white and brown tints assimilating well with the colors of the beach.

The Florida species has similar habits, and is doubtless a maritime or shore species. It is from Punta Gorda.

The genus *Lipochæta*, described recently by Coquillett for the Florida species (ENT. NEWS, September, 1896), is truly one of singular aspect and anomalous position, though clearly allied to the Ephydridæ. It is, however, totally different in several important respects from that family as at present characterized. The excessively short face, greatly widened and enlarged oral cavity, the projecting clypeus showing in a wide semi-circle; the elongate, flattened, and widened head, wedge-shaped in profile;

the wide front, round eyes and minute antennæ; all these taken together, with the absence of all bristles, give this fly from a front view a striking appearance, which can only be described as "frog-mouthed" or "frog-faced."

In the shape of the head, this genus bears a considerable resemblance to *Pteremis nivalis* Haliday. The appearance of the head from above is almost exactly the same, but the profile view at once shows marked differences.

The striking similarity in the maritime faunas of the south Texas and Florida coasts, indicated by such forms as *Macrancylus*, *Oxacis*, etc., among the Coleoptera, is thus seen to be borne out also by the Diptera in *Tabanus maritimus* and *psammophilus*, *Lipochæta*, etc.

———o———

AN INSECT-CATCHING PLANT.

By C. P. GILLETTE, Fort Collins, Colo.

Any one who has attempted to collect the pretty blue flowers from *Lactuca pulchella* must have been annoyed by the disagreeable sticky exudation that covers the buds and stems near the flowers, and probably the latter were soon thrown away in disgust. This plant grows in great profusion along the railroad track near the college grounds at Fort Collins, where it vies with the entomological enthusiasts in the insect captures that it makes. In a few minutes' time this afternoon I noticed the following insects stuck fast, and for the most part dead, in the gummy exudation above mentioned:

Hymenoptera.

Chalybion cœruleum
Ambyletes subrufus
Myrmica lobicornis
Formica fusca
" *integra*
Chrysis sp.

Coleoptera.

Hippodamia convergens
" *sinuata*
Coccinella 9-notata
" *sanguinea*
Nœmia episcopalis
Scymnus sp.
Trirhabda canadensis
Ellychnia corrusca
Epicauta cinerea.

Odonata.

Lestes congener.

There were also several species of Diptera and parasitic Hymenoptera as well as other species of ants that I did not know.

Ants, ladybeetles and the Lampyrid above mentioned were specially abundant. Probably the ants and ladybeetles were attracted by the green lice, a species of *Nectarophora*, that are abundant on the plants. The lice and a *Syrphus* larva that feeds upon them seem to experience no trouble at all from sticking to the plant. A few Coccinellid larvæ were also seen, but in every case they were dead and quite small.

———o———

TENODERA SINENSIS?

By ELLA JACOBS, Philadelphia.

While on a visit to Meehan's nurseries in Germantown, in March, 1898, a party of us found, on some low spruce and cedars, several curious looking specimens of what we were not sure. They looked like galls—they were hemi-spherical in shape, with a diameter of about 1¼ inch. the flat side up, curved side down. I cut one of these whitish brown specimens open. It was rather tough, and contained a sticky fluid throughout. I was not sufficient of a scientist to discover what it was, so waited developments with the others. About the end of May, as I went to my office, the janitor greeted me with the pleasant news that my room was full of "bugs." Rather startled, I proceeded to investigate, and discovered several hundred insects on the wall, over pictures and desk. I examined closely and decided it was the fault of my unnamed specimen. I noticed that it was broken open in ridges; I placed it in a box and in an hour I saw several of the insects emerge. The curious part is, that these insects appeared to be the Praying Mantis. A visit to Dr. Skinner, at the Academy, confirmed this fact.

It seems rather a coincidence to have found these in this locality so soon after the report of Mr. Laurent's (see ENT. NEWS, for June, page 144) find of a somewhat similar character.

I greatly regret that we took all of the cases we saw, six of them, as I know now that their contents would have been a valuable acquisition to the nurseries as these carnivorous insects would have eaten other insects injurious to the plants. Undoubtedly these Mantids must have been imported on some foreign plants.

[The young mantids are not our *Stagomantis carolina*.—ED.]

A SOUTHERN TYPE OF ANDRENA IN CONNECTICUT.

By T. D. A. COCKERELL, N. M. Agr. Exp. Station.

Andrena rhodura n. sp. ♀.—Length slightly over 10 mm., stoutly built, black, with the abdomen and tarsi largely red. Head broad, the facial quadrangle* broader than long, its sides parallel; pubescence of head and thorax moderately long, but not very dense, dirty yellowish white, shining; clypeus rather prominent, with strong, rather close punctures; basal process of labrum broad, rounded, subtruncate at tip, not emarginate; mandibles feebly notched within near the end; antennæ black, flagellum tinged with dark brown beneath; mesothorax rather shiny, minutely tessellate, with sparse, but strong and very conspicuous punctures; scutellum similarly sculptured, but the punctures are aggregated in the median line and again at the sides; pleura quite closely punctured; metathorax rather closely, but shallowly punctured; the enclosure indistinctly marked by a line only, minutely granular or rugose, only at the base slightly inclined to be plicate, produced to a point behind; the enclosure is duller than the sides of the metathorax; tegulæ very dark chestnut-brown, minutely lineolately sculptured. Wings with a strong reddish yellow tinge, subcostal nervure black, the nervures and the stigma ferruginous. Legs black, with pale pubescence, the first four tarsi largely, and the hind tarsi entirely, ferruginous; the hind tibiæ are ferruginous at the distal end. Abdomen rather broad, shining; without hair bands, but with pale, glittering yellowish hairs on the fourth segment at the sides, and densely on the fifth, the anal fimbria pale yellowish, upper surface of abdomen minutely tessellate, with sparse, very feeble punctures. Color deep chestnut-red, the base of first segment, and the bases of all the segments broadly black, a black spot on each side of the second segment; venter reddish, largely suffused with black.

Hab.—Hartford, Conn., June 2, 1895 (S. N. Dunning).

The sculpture of the metathorax at once separates this from *A. mariæ* Rob. From *A. erythrogastra* Ashm. (*perezi* Rob.) it will be readily known by the strong mesothoracic punctures and the strongly colored wings.

A. rhodura is a very interesting species, quite alone among the forms taken in the New England States, but belonging to a series which becomes well developed in the southwest, with *A. jessicæ argemonis*, *prunorum*, *mellea* and *casadæ*, and extends far down into Mexico, as in *A. discreta*. It is, however, distinct from all these species, as might be expected from the widely different habitat.

* The term "facial quadrangle" is herewith proposed for the quadrangle formed by the facial margins of the orbits and imaginary lines drawn transversely connecting the upper and again the lower ends of the eyes.

The following form shows the northern extension of the same type of *Andrena* in the Rocky Mountain region :

Andrena prunorum Ckll. subsp. **gillettei** n. subsp. ♂.—Length 11 mm.; smaller and more slender than *prunorum;* antennæ more distinctly crenulated, entirely dark, without any ferruginous, even on scape; pubescence of head and thorax very pale yellowish instead of fulvous; femora black, with only the apex ferruginous; second and third abdominal segments wholly ferruginous, except a small, oval, black spot on each side of second, fourth segment ferruginous laterally at base; venter ferruginous, dusky at apex; clypeus lemon-yellow, with two black spots. Thorax wholly black. Abdomen closely and distinctly punctured, Wings dusky at apex; stigma ferruginous; basal process of labrum emarginate.

Hab.—Fort Collins, Colorado, April 15, 1897 (C. P. Gillette, 2468).

———o———

Sphæridium scarabæoides Linn.

By C. HOUGHTON, Potsdam, N. Y.

This interesting species, which I first discovered here during the Summer of 1896, is now quite common in this section of the country. It may be confidently looked for at any time during the months of June, July and August, provided one knows its habitat. Unless he does it is safe to say that he will know but little about the species, as I have never seen it anywhere except in one place, viz., about the cow-droppings in the pastures.

On any pleasant day during the three months above mentioned, should one take a position near some fresh droppings, he would probably soon see one of these beetles come flying rapidly across the pastures and, hovering for a second over the spot, suddenly bury itself in the soft excrement. With a stick or paddle it is an easy matter to locate them, but one needs to be quite expert with the pincers else he will soon lose his specimens, as it is a very agile species and burrows out of sight with astonishing rapidity. As soon as the droppings begin to dry up, it is useless to look for them therein, as they immediately leave for other places more to their taste.

As an instance of their numbers in this locality, I might say that I have taken, during the course of a quarter of an hour, as many as twenty-five of these beetles from a single pile of droppings.

Associated with them I have found the following : *Aphodius fossor, Aph. prodromus, Aph. fimetarius, Aph inquinatus, Aph. varicola, Atænius cognatus, Onthophagus hecate, Hister abbreviatus, Cercyon hæmorrhoidalis, Cleochara bimaculata, Philonthus longicornis* and various other species of Staphylinidæ.

ENTOMOLOGICAL NEWS.

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PHILADELPHIA, PA., SEPTEMBER, 1898.

The Effect of the War in Relation to Entomology.

Now that the United States will add to its territory the question arises what will entomologists do in the matter? Undoubtedly those in America will take a greater interest in the annexed countries and some that do not collect or have any regard for exotic insects at present may be induced by political reasons to do so. Our present faunal limit (America north of Mexico) is geographical, inasmuch as we include the country to the north of the United States to the Arctic Ocean. The proper plan for students to adopt, especially systematists, would be to ignore political and geographical lines and take up for study some genus, family, or order of the world. In this way the true relationships of genera and species may be properly understood. Work on geographical lines has caused an almost endless amount of trouble in generic relations and synonymy. We very much doubt whether our American lists will ever contain the names of Cuban, Porto Rican, Philippine or Hawaiian insects.

ON June 15th a specimen of *Papilio cresphontes* Fab., was taken here in the greenhouse. It was somewhat rubbed and faded, showing that it was not a fresh specimen, but the wings were unbroken. This is the first time I have seen the species since coming to New Haven, Ct., four years ago. *P. philenor* is very common in this locality. During June, 1896, I captured two specimens of *Colias cæsonia* Stoll., but have not observed it any other season.—W. E. BRITTON.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Mrs. SLOSSON has taken the female of *Thecla telea* Hew. at Miami, Fla.

ANTHOCHARIS GENUTIA has been plentiful this season at Westville, N. J., which is only a few miles from Philadelphia.

Prof. JAMES FLETCHER expects to take some fine things this season in the Rocky Mountains of Canada. We wish him great success.

PAMPHILA METEA evidently has quite a wide distribution. Dr. Scudder mentions various places in New England where it is found, and also cites New York and Wisconsin. Mr. Edwards, in addition to the other localities, gives Texas and Colorado. The Colorado locality is based on the female described by Reakirt under the name *ridingsii*. I have it from Missouri, and recently the Philadelphia collectors have found it in abundance at Clementon, N. J., where it is found on barren sandy patches, alighting on the sand and on the sand myrtle. The full life-history may be worked out this year. *Syneda graphica* is also very abundant at Clementon.—HENRY SKINNER.

Mr. WM. J. GERHARD, of the Academy of Natural Sciences Philadelphia, is studying our material in the Hesperidæ of the world and arranging them according to the most recent classification. He is not quite sure whether genera or species are in excess, and when he gets through he may have a genus for every species, as is the case in our Eastern Papilios according to one of our esteemed New England friends. According to the "Biologia" we must put (*Eudamus*) *pylades* and *bathyllus* in different genera on the strength of the male sexual character, the costal fold, which is so common in the family. This question of genera, to say the least, is a very interesting one, and no man can tell where it may end. —H. S.

YESTERDAY, when I was driving out in the country on professional business, a *Pamphila* sat down on the back of my left hand and began to feed in the same manner as is told by Mr. J. M. Dodge in ENT. NEWS, vol. ix, p. 89. At first I thought it was drinking the sweat, but then I remarked that it curved its abdomen a little between the legs and ejected a fluid, upon which it fed. The wings were kept together all the time, and I was not able to identify it surely, but I believe it was a *P. hobomok*.

Last Winter I found a cocoon of *Cecropia* on a hazel bush, and as it felt empty I opened it and found an Indian corn in it. How did it get there? Birds?.—C. HOEG, Decorah, Iowa.

BUG STEALS A DIAMOND PIN.—A monster bug robbed Jesse P. Van Doozer, of Evanston, of a $200 diamond scarf-pin Saturday night. Mr. Van Doozer is the famous former captain and coach of the Northwestern

University football team, and is now assistant postmaster at Evanston. How he happened to loose his pin is told as follows: As Mr. Van Doozer was returning from the Summer evening party at the Country Club Saturday night his attention was attracted by a particularly large specimen of the genus beetle. In college Mr. Van Doozer was an ardent student of zoology, especially of the branch technically named entomology, but known to the uninitiated as "bugology" He still retains his studious habits, and this struck him as an unusually choice heteropterous hemipterous specimen. With practiced dexterity he captured the mean-looking insect and carried it squirming to his room. As no pin was convenient, he stuck the monster bug to the wall for a moment with his diamond scarfpin. He turned to his bug collection and spent some time in rearranging it and making a place for his new acquisition. A lively buzzing drew his attention to the beetle, which had worked itself loose from the wall and began to circle about the room with the pin sticking through his body. Van Doozer made for the open window, but the great beetle was too quick for him. As it darted through the opening the sparkle of the stone added a new brightness to its sheen. The diamond scarfpin is still missing.—*Newspaper.*

Cychrus viduus Dej.—This very handsome species, hitherto regarded as quite rare, has been taken in numbers about Pittsburgh, Pa., during the season of 1897. Every collector who really searched for the species at the right time was rewarded for his labor. One of them took as many as ninety specimens in five days—an average of eighteen a day. How many this same party took since, the writer does not know, but from information received the number must have been considerable.

In the opinion of the writer the best time to look for *viduus* is from about the 25th of July until the middle of September. The fact that most, if not all, of the captures above alluded to were made during this period is of itself sufficient evidence. The condition of the weather has much to do as regards the abundance or scarcity of the species, a wet season always being much better than a dry one. Whether or not the former actually produces more specimens than the latter the writer does not venture to say, but it is highly probable that it does; at any rate it drives them to the surface where they are much more likely to be found. The weather the past Summer was unusually favorable, as we had rain almost every day for about six or seven weeks beginning July 5th.

I wish to place on record the following notes:

Smodicum cucujiforme Kirby.—This species has been breeding for the past three years in some locust fence-posts which were entirely stripped of bark and set ten years ago. The beetles emerge from the latter part of June until the middle of July.

Obrium rubidum Newm.—My collection contains one specimen of this very rare longhorn, which was bred from *Robinia pseudacacia* (locust), the beetle emerging May 3, 1894. Several other specimens which I have had were taken on locust trunks on as many different occasions.

Cyrtophorus verrucosus Oliv.—This species also breeds in *Robinia pseudacacia* and is not unfrequently taken on the living trunks during May and early June. Sometimes specimens are taken in April if the weather be quite warm.—EDWARD A. KLAGES, Crafton, Pa.

Entomological Literature.†

Under the above head it is intended to note such papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South). Articles irrelevant to American entomology will not be noted. Contributions to the anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **heavy-faced type** refer to the journals, as numbered in the following list, in which the papers are published; * denotes that the paper in question contains descriptions of new North American forms. Titles of all articles in foreign languages are translated into English; usually such articles are written in the same language as the title of the journal containing them, but when such articles are in other languages than English, French, German or Italian, this fact is indicated in parenthesis.

2. Transactions of the American Entomological Society, Philadelphia, xxv, 1, '98.—**3.** The American Naturalist, Boston, '98.—**4.** The Canadian Entomologist, London, Ont., '98.—**5.** Psyche, Cambridge, Mass., 98.—**6.** Journal of the New York Entomological Society, June, '98.—**7.** U. S. Department of Agriculture, Division of Entomology, Washington; publications of, '98.—**8.** The Entomologist's Monthly Magazine, London, '98.—**9.** The Entomologist, London, '98.—**10.** Nature, London, '98.—**11.** The Annals and Magazine of Natural History, London, 98.—**15.** Biologia Centrali-Americana, pt. cxli, London, April, '98.—**21.** The Entomologist's Record, London, '98.—**22.** Zoologischer Anzeiger, Leipsic, '98.—**24.** Berliner Entomologische Zeitschrift, xlii, 3-4, July, '98.—**30.** Memoires et Bulletins de la Société Zoologique de France, Paris, '97.—**32.** Bulletin du Muséum d'Histoire Naturelle, Paris, '98.—**35.** Annales et Memoires, Société Entomologique de Belgique, Brussels.—**36.** Transactions, Entomological Society of London, '98, pt. 2, June 29.—**38.** Wiener Entomologische Zeitung, xvii, '98.—**40.** Societas Entomologica, Zurich-Hottingen, '98.—**44.** Verhandlungen, k. k. zool.-bot. Gesellschaft in Wien, xlviii, '98.—**45.** Deutsche Entomologische Zeitschrift, Berlin, '98, 1, June.—**49.** Termeszetrajzi Füzetek, Budapest, xxi, 1-2, Mar. 10, '98.—**55.** Le Naturaliste, Paris, '98.—**61.** Natural Science, London, May, '98.—**66.** Naturwissenschaftliche Rundschau, Braunschweig, '98.—**76.** Journal, Cincinnati Society of Natural History, xix, 4, '98.—**77.** Report, State Board of Agriculture on the work of extermination of the gypsy moth, Boston, Wright & Potter Co., State Printers, Jan., '98.—**78.** Gardeners' Chronicle, London, '98.—**79.** La Nature, Paris, '98.—**80.** Annali, Museo Civico di Storia Naturale di Genova (2) xviii. Rec'd Aug. 8, '98.—**81.** Biologisches Centralblatt, Erlangen, June

† The Associate Editor is again indebted to Mr. W. J. Fox and to Dr. Skinner for caring for this department during his Summer vacation.—P. P. C.

15, '98.—**82.** Centralblatt für Bakteriologie, etc., Jena, '98.—**83.** Notes from the Leyden Museum, xix, 3-4, Dec. 30, '97.—**84.** Insekten-Börse, Leipsic, '98.—**85.** Bulletin, Société des Sciences naturelles de l'Ouest de la France, Nantes, viii, 1, '98.

The General Subject.—de Bruyne, C. Researches on the subject of the intervention of phagocytosis in the development of Invertebrates, 5 pls., Archives de Biologie, xv, 2, Ghent, '98.—Calvert, P. P. A biographical notice of George Henry Horn (portrait), **2.**—Comstock, J. H. and Needham, J. G. The wings of insects, iii, figs, **3,** April, May, June.—Coupin, H. Flowers fertilized by bats and insects, **79,** May 14.—[Dixey, F. A.] Hybridization, **9,** July.—Garbowski, T. Brunner v. Wattenwyl's "Observations on the coloration of insects", **81.**—Hanstein, R. v. [On recent work on facetted eyes], **66,** May 28.—Howard, L. O. The spread of land species by the agency of man; with especial reference to insects, Proceedings, American Association for the Advancement of Science, xlvi.—Howes, G. and Smith, W. W. Notes on *Sphæria larvarum* Westw., **9,** June.—Kienitz-Gerloff. Prof. Plateau and the flower-theory, **81.**—v. Linden, M. Eimer's 'Orthogenesis der Schmetterlinge' (cont.), **81.**—Marchal, P. Notes on an excursion in Algeria and Tunis, 1 pl., **30,** Mem. x. See also Hymenoptera.—Needham, J. G. Outdoor Studies, a Reading book of Nature study (Eclectic school readings). American Book Co. New York, Cincinnati, Chicago, 1898; 90 pp., 88 figs. Chapters on galls, golden-rod insects, dragonflies, eye-spot markings and ant-lions.—Salzner, A. Eimer's 'Orthogenesis der Schmetterlinge', **84.** June 30, July 7, 14.—Schaufuss. Symphily is broodparasitism, Naturwissenschaftliche Wochenschrift. Berlin, July 17, '98.—Slingerland, M. V. Obituary of Dr. J. A. Lintner, **4,** June.—Taylor, G. W. Entomology, notes for April in Vancouver Island, Ottawa Naturalist, June, '98.—Tutt, J. W. Books from the American masters [Packard: Text-book, Scudder: Melanopli, Fernald: Pterophoridæ], **21,** June 15.—Webster, F. M. Obituary of Prof. D. S. Kellicott, **4,** June.—Wheeler, W. M. Prof. Packard's Text-book of Entomology, Science, New York, June 17, '98.—Wickham, H. F. List of insects collected by Mr. Frank Russell in the Northwest Territory, Canada. Iowa City, June, '98. Extract (pp. 276-280), from 'Explorations in the far North' by F. Russell.

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worm, Archives Italiennes de Biologie, xxix, 1. Turin, '98.—Davey, F. H. Notes on the bulb-mite, figs. Journal, Royal Institution of Cornwall, xiii, 2. Truro, '97.—Debray. Destruction of injurious insects, **55,** May 15, June 15.—Fernald, C. H. Report of Entomologist; Arsenate of lead as an insecticide, **77.**—Forbush, E. H. Report of the Field Director, **77.**—G. A. Bulb mite, **78,** June 25.—Gillette, C. P. Colorado's worst insect pests and their remedies, figs., Bulletin 47, State Agricultural College Exper. Station, Fort Collins, Col., July, '98.—Kenyon, F. C. Abstracts of recent articles, **7,** Exper. Station Record, ix, 10.—Kheil, N. M. Fight between grasshoppers and a locomotive, **84,** June 23.—Kirkaldy, G. W. An economic use for waterbugs, **8,** Aug.—Kirkland, A. H. Experiments with insecticides; Danger from the use of arsenate of lead, **77.**—Lesne, P. Description of the larva and nymph of *Balanogastris kolæ* in kola nuts, figs., **32,** No. 3.—Lounsbury, C. P. Report of the Government Entomologist for the year 1897. Cape of Good Hope. Cape Town: 1898.—Lowe, V. H. Cottonwood leaf beetle. Green arsenite, Bulletin No. 143. New York Agricultural Experiment Station, Geneva, N. Y.. April, '98.—Marlatt, C. L. The periodical Cicada. An account of *Cicada septendecim*, its natural enemies and the means of preventing its injury, together with a summary of the distribution of the different broods. Bulletin No. 14 new series, **7,** 148 pp. 57 text figs. (including maps) and 4 plates (one colored). An extensive monograph whose contents are well summarized in the title.—McLachlan, R., R. M., Forbes, A. C. [Insect pests on forest trees] **78,** June 25.—R. M. The present plague of insects, **78,** June 18.—Slingerland, M. V. The quince curculio, figs., Bulletin 148, Cornell University Agricultural Experiment Station, Ithaca, N. Y., May, '98.—Smith, F. J. Arsenate of lead: its manufacture and chemical composition, **77.**—Webster, F. M. The importation of the San José scale, *Aspidiotus perniciosus*, from Japan, **4,** July.—Wood, E. W. and others. Report of Committee [on extermination of gypsy moth], **77.**—Xambeu, Capt. Habits and metamorphoses of *Lyctus canaliculatus* Fab., **85.**

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of *Chelonus*, **49.**—Wickham, H. F. On Coleoptera found with ants, iv, 1 pl., **5,** June; The Coleoptera of Canada, xxix, the Oedemeridæ and Cephaloideæ of Ontario and Quebec, figs., **4,** June; The beetles of southern Arizona, Bulletins, Laboratories of Natural History, State University of Iowa, iv, 3, Iowa City, June, '98.

Diptera.—Dahl, F. On *Puliciphora lucifera*, **22,** May 2.—Eaton, A. E. Supplement to "A Synopsis of British Psychodidæ" (cont.), **8,** June, July.—Koorevaar, P. *Hypoderma bovis* and its youngest larva, **82,** June 1.—Mik, J. Noteworthy relations between *Desmometopa M-atrum* Meig. from Europe and *Agromyza minutissima* v. d. Wulp from New Guinea, **38,** 4 and 5, May 31; Dipterological miscellany (2), xi, **38,** July 10.—Minakatá, Kumagusu. Notes on the Bugonia superstitions: the occurrence of *Eristalis tenax* in India, **10,** June 2.—Osten Sacken, C. R. Identification of two genera of Nemestrinidæ published by Bigot, together with some remarks on Dr. Wandolleck's paper on that family; *Amalopsis* Halid. (O. S.) versus *Tricyphona* Bergroth (not Zett.), **24.**—Schneidemühl. On the development of *Hypoderma bovis*, **82,** July 15.—Stein, P. North American Anthomyidæ,* **24.**

Lepidoptera.—Bacot, A. Notes on hybrid *Smerinthus populi-ocellatus*, 1 pl.; Notes on hybrids obtained by crossing *Tephrosia bistortata* with *T. crepuscularia*, **21,** Aug. 1.—Beutenmüller, W. Revision of the species of *Euchloë* inhabiting America, north of Mexico,* 2 pls., Bulletin, American Museum of Natural History, x, 13, New York, June 24, '98.—Butler, A. G. On the butterflies of the genera *Leptophobia* and *Pieris*, **11,** July.—Chapman, T. A. Some notes on the pupal moult of Lepidoptera, **21,** May 15; Some remarks on *Heterogyna penella*, **36;** Some notes on the pupal moult of Lepidoptera, **21,** Aug. 1.—Cockerell, T. D. A. A new *Hemileuca*,* **5,** Aug.—Crampton, H. E., Jr. Coalescence experiments upon the Lepidoptera, Biological Lectures delivered at the Marine Biological Laboratory of Wood's Holl, 1896–1897.—Dognin, P. New Heterocera from Ecuador, **35,** Ann., xlii, 5, May 24, '98.—Druce, H. Descriptions of some new species of Syntomidæ chiefly in the Oxford Museum, **11,** May.—Dury, C. *Callidryas eubule;* A butterfly new to Ohio; Tomato worm parasite, **76.**—Druce, H. Lepidoptera Heterocera,* vol. ii, pp. 449–464, pls. lxxxviii–xci, **15.**—Dyar, H. G. The Epiplemidæ the lowest Bombycids, figs., **4,** June; The life-histories of the New York slug caterpillars, xv, 1 pl.; Description of larvæ of Hemileucids from the Argentine Republic, **6;** Six new or little-known larvæ of Pterophoridæ,* **5,** Aug.—Elwes, H. J. A revision of the genus *Erebia*, **36.**—Field, W. L. W. A contribution to the study of individual variation in the wings of Lepidoptera, Proceedings, American Academy of Arts and Sciences xxxiii, No. 21.—Frings, K. Experiments with low temperatures in 1897, **40,** June 1, et seq.—Fritze, A. The genus *Hebomoia*, 1 pl., Zoologische Jahrbücher, xi, Jena, May 2, '98.—Fruhstorfer, H. On a chief pleasure

of the eyes named 'Agrias', 1 pl., **24.**—Griffiths, G. C. On the frenulum of the Lepidoptera, 1 pl., **36.**—Grimshaw, P. H. See Coleoptera.—Grose-Smith, H. Descriptions of new species of butterflies from South America, **11,** July.—Grote, A. R. The British Museum catalogue of moths, **61;** Classification of the Saturniades, **21,** June 15; Specialization of the lepidopterous wing, the Pieri-Nymphalidæ, Proceedings American Philosophical Society, Philadelphia, xxxvii, No. 157.—Hanham, A. W. Notes on collecting at bloom, **4,** July.—Hill, W. H. F. Notes on some Victorian case moths, part i, 1 pl., Victorian Naturalist, Melbourne, May, '98.—Hulst, G. D. Descriptions of new genera and species of the Geometrina of North America (cont.),* **4,** June, July.—Kirkland, A. H. Digestion in the larvæ of the gypsy moth, **77.**—Marshall, G. A. K. Seasonal dimorphism in butterflies of the genus *Precis* Doubl., **11,** July.—McCorquodale, W. H. Horn-feeding larvæ, fig., **10,** June 9.—Moore, F. Lepidoptera Indica. Part xxx. London, L. Reeve & Co., '98. Rec'd June 27, '98. [Pp. 113–128, vol. iii, pls. 231–238. Nymphalinæ, group Euthaliina].—Schaus, W. New species of Noctuidæ from tropical America;* New species of Heterocera from tropical America,* **6.**—Schultz, O. Description of some gynandromorphous Lepidoptera, **24.**—Scudder, S. H. A study of the caterpillars of North American swallowtail butterflies, ii, **5,** June.—Seurat, L. G. Metamorphoses of *Papilio daunus,* Memorias y Revista de la Sociedad Cientifica "Antonio Alzate," xi, 1–4, Mexico, '98.—Smith, J. B. Notes on species of *Noctua* with descriptisns of new forms,* 1 pl., **6.**—Urech, F. Some remarks on color alterations of the wing scales produced by girdling soft pupæ of *Vanessa urticæ,* **40,** June 1.—Verson, E. On the development of the digestive canal of the silkworm, ii, **22,** July 18.—Voss, T. On hermaphrodite Lepidoptera, **84,** June 23.—Walsingham, Lord. Descriptions of a new Micropterygid genus and species and a new Eriocraniad species from N. America, 1 pl., **21,** July 1; A review, with some critical notes of "The Pterophoridæ of North America, C. H. Fernald," etc., **8,** Aug.

Hymenoptera.—Ashmead, W. H. Classification of the horntails and sawflies, or the sub-order Phytophaga, i, **4,** June, July; Thynnidæ in the United States,* **5,** Aug.—Cockerell, T. D. A. New bees from New Mexico,* **4,** June; *Philanthus henricus,* **4,** July; Synopsis of the North American bees of the genus *Stelis,** **9,** July; The North American bees of the genus *Prosapis,* **9,** Aug.—Dominique, J. Glance at the South American Melliferæ in the Museum of Nantes, **85.**—Dunning, S. N. Monograph of the species of *Aphilanthops* inhabiting Boreal America,* **2;** Notes on *Philanthus,** **4,** June.—Dyar, H. G. On the larvæ of certain Nematinæ and Blennocampinæ with description of new species,* **6;** Notes on some sawfly larvæ, especially the Xyelidæ, **4,** July.—Enock, F. Aquatic Hymenopteron [breeding of *Prestwichia*], **10,** June 23; Notes on the early stages of *Prestwichia aquatica,* **8,** July.—Fox, W. J. The species of *Psen* inhabiting America

north of Mexico,* **2.**—Friese, H. New species of the bee genus *Eulema* Lep., **49.**—v. Hanstein, R. A Bethe's "Can we ascribe psychical qualities to ants and bees?", **66,** June 18.—Janet, C. Notice on the scientific works presented to the Academie des Sciences in the competition of 1896 for the Thore prize. [On ants, bees and wasps], 94 pp. Lille; Morphological limits and musculature of the post-cephalic annuli of *Myrmica rubra*. Lille, '97, 8vo.; Relations of the myrmecophilous animals with ants, figs. Limoges, '97, 8vo.; Apparatus for the observation of ants and myrmecophilous animals, 1 pl., **30,** Mem., x; Parasites and mess-mates in ant-hills (transl. abstract), **61.**—Konow, F. W. Synonymical and critical remarks on Tenthredinid species of the older authors incorrectly or not referred, **40,** July 1, 15.—Marchal, P. A new method of non sexual reproduction in Hymenopterous insects (transl. from C. R. Acad Sci. Paris), **61.**—Marshall, T. A. Supplement to Braconidæ, 3 pls., in Species des Hyménoptères d'Europe d'Algerie fondé par Edmond André, continué sous Ernest André, 62e fascicule, Paris, April 1, '98.—Robertson, C. New or little-known North American bees,* Transactions, Academy of Science, St. Louis, viii, 3, Mar. 3, '98.—Wasmann, E. *Thorictus foreli* as ectoparasite of ants' antennæ, **22,** July 18.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held May 26th, Mr. C. S. Welles, Director, presiding. A cabinet of beetles was presented by Dr. J. Eckfeldt. Five new species of Mutillidæ were presented by Mrs. Slosson. Dr. Calvert exhibited a box of small *Mantids* collected near the city and made some remarks on the egg-case in the genus. The same gentleman also exhibited some dragonflies collected by Mrs. A. T. Slosson at Miami, Florida. *Enallagma cardenium* ♂ was collected for the first time in the United States; the species was described by Selys from Cuba. *Enallagma cæcum* Hagen, from Jamaica, was mentioned as an allied species. *E. pollutum*, of Hagen, from Florida, is either very variable, or there are two species confounded under that name. *Gomphus minutus* ♀ and other species were shown and interesting points mentioned. Mr. Johnson exhibited a mud wasp's nest, *Odynerus* sp. collected by Mr. C. Moore on the Altamaha River, Ga. Mr. Fox recorded a second American

species of *Miscophus* from Florida. Dr. Calvert spoke of the oviposition of gall-flies and mentioned seeing a gall-fly apparently in the act, but did not see any eggs go through the ovipositor.

Dr. HENRY SKINNER, *Recording Secretary.*

A meeting of the American Entomological Society was held June 23d, Dr. P. P. Calvert, Vice-president, in the chair. The Corresponding Secretary announced the death of the following correspondents of the Society: James Behrens, San Francisco, Cala.; elected Oct. 14, 1872, died March 6, 1898. Johnson Pettit, Grimsby, Ont.; elected Nov. 12, 1866, died Feb. 18, 1898. J. A. Lintner, Albany, N. Y.; elected Nov. 10, 1862, died May 5, 1898. Osbert Salvin, elected June 28, 1897, died June 1, 1898. Dr. Calvert exhibited some dragonflies collected by Mr. C. W. Johnson on a recent visit to North Mt., Pa.: *Cordulia shurtleffii* (= *ænea* L.), described by Scudder from Hermit Lake, Mt. Washington, was of special interest on account of being a circumpolar species and this the first record of capture in Pennsylvania; *Gomphus spicatus*, also new to Pennsylvania, never before having been found this far south; and both sexes of *Ophiogomphus rupinsulensis*. *Ischnura verticalis*, a small dragonfly was found at Kirkwood, N. J., feeding on *Enallagma* sp. which had just transformed from the larval condition and was thus helpless. Mr. Needham finds that in some species larvæ are very abundant, but imagos scarce; facts like the above would account for Needham's finding. *Enallagma divagans*, a somewhat rare local species, was also found at Kirkwood. Dr. David Sharp, of Cambridge, England, was elected a correspondent.

Dr. HENRY SKINNER, *Recording Secretary.*

ENTOMOLOGICAL NEWS for June was mailed May 31, 1898.

EXCHANGES

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Lepidoptera.—For exchange *Argynnis charielea* var. *artica* Zett. and *Glaucopteryx polata* Hüb. These are from the Peary expedition to North Greenland.—Henry Skinner, M.D., Acad. Nat. Sci., 19th and Race Sts., Phila., Pa.

All Orders.—I have named insects of all orders to exchange for specimens, named or unnamed, of all orders except Lepidoptera.—Charles Brues, 320 Hampden Ct., Chicago.

Wanted to purchase or exchange for specimens of *Pierus rapæ* from all parts of the United States and Canada. Full information of date and locality must be given. Abnormal specimens especially wanted. Address William L. Tower, High School, Akron, Ohio.

Wanted Microlepidoptera, especially *Tineina* from all parts of U. S.; will buy or exchange for Coleoptera and Lepidoptera. Will also collect in other orders if desired. Address Dr. W. G. Dietz, 21 N. Vine St., Hazleton, Pa.

Wanted.—American Dragonflies (Odonata) and Myrmeleonidæ. Sialidæ from any locality. Literature on the above groups.—Chas. C. Adams, Urbana, Ill.

Coleoptera.—Wanted to purchase species of *Nomaretus*, *Cychrus*, *Carabus* and *Calosoma*.—A. Luetgens, 14 W. 17th St. New York City.

Lepidoptera.—*Morpho polyphemus*, *Caligo uranus*, *Antheræa chapata* and other rare Mexican species for exchange. Correspondence solicited. —O. W. Barrett, Clarendon, Vt.

Lepidoptera.—Will exchange anything in my collection, or collect in any branch, for works on any families of Lepidoptera not already in my library.—O. C. Poling, Quincy, Ill.

In the coming season will exchange for exotic Lepidoptera, also native cocoons and pupæ of Lunas: *Cecropia*, *Polyphemus*, *Regalis*, *Imperialis*, *Sm. myops*, *excæcatus*, *A. rubicunda* and many others. Send for list.—George Krautwurm, Arlington Place. Lincoln Ave., E. E. Pittsburg, Pa.

Homoptera.—Wanted Jassidæ and Cercopidæ. Will exchange or purchase.—E. W. Ball, Ft. Collins, Colo.

Lepidoptera of India and Europe for exchange; ova yamamai for sale. *Carabus olympiæ* for sale and exchange. Wanted live cocoons.—Emil Hever, Moritzstrasse 8, Elberfeld, Germany.

Will name and return species of *Nonagria* and *Hydrœcia* for the privilege of retaining desirable species a brief period for purposes of study. —John B. Smith, New Brunswick, N. J.

Lepidoptera.—Cocoons of *P. cecropia, T. polyphemus* and *C. promethea* to exchange for Lepidoptera not in my collection.—C. D. Heim, 156 Fourth St., Sunbury, Pa.

Fine Ornithoptera: *Miranda* ♂♀, *Andromache* ♂♀, *Brookiana* ♂♀, *Druryia antimachus*, etc., and Bornean Bflies in exchange (for other exotics). Butterflies only, or buy other rare species.—W. Dannatt, F. E. S., Ivy Dene, Westcombe Park, London S. E. England.

Wanted.—Live pupæ of *Luna, Io, Imperialis, Regalis*, etc., will exchange bird skins, eggs, stuffed birds, etc.—John Clayton, Lincoln, Me.

"Cocoons of *Cecropia, Cynthia* and *Promethea* for exchange for some cocoons of *Luna* and *Polyphemus*.—Mathias Mertz, 66 Leonard St., N. Y. City.

I will take in exchange for rare and beautiful exotic butterflies, living pupæ and cocoons of *Pap. ajax, zolicaon, cresphontes, Sm. modestus, astylus, Eacles regalis, imperialis, Plat. gloverii, A. ceanothi, columbia* and others.—Chas. F. Timm, 62 Ralph St., Brooklyn, N. Y.

Lepidoptera.—Exchange wanted from all other parts of the United States and Canada for specimens from northeastern Pennsylvania. Correspondence solicited.—Alfred E. Lister, 921 Vine St., Scranton, Pa.

For exchange.—Insect Life, vol. i, 1–2; vol. iii, 1–6. Price 15c. each.—Eugene R. Fischer, 2707 Winnebago St., St. Louis, Mo.

Geometridæ wanted.—Will purchase or give good exchange in other Lepidoptera. Send lists and prices. –Edw. W. Cross, Manchester, N. H.

Longicorn beetles and Parnassius and Pierids in papers wanted in exchange for about 150 species of Orthoptera and Papilios (my own collection), many rarities included.—John Watson, 94 George St., Alexandra Park, Manchester, England.

Odonata.—I want dragonflies from any locality in America, and will exchange for same. Will collect in any order in this region for cash.—M. J. Elrod, University of Montana, Missoula, Mont.

Lepidoptera.—Living pupæ of *Eacles imperialis* for exchange.—H. Meeske, 321 Wyckoff Ave., Brooklyn, N. Y.

Lepidoptera.—Exchange desired with collectors everywhere. I offer Lepidoptera, and will also collect in other orders. Send lists.—Ernest N. Laing, Essex, Ontario, Canada.

Wanted.—Tingitidæ especially from the U. S. All specimens sent for determination will be returned.—F. M. McElfresh, Urbana, Ill.

Tipulidæ.—Will exchange in any order for North American Tipulidæ.—C. V. Piper, Agricultural College, Pullman, Wash.

Am open to collect any order that is required this season to be found in Colorado. Correspondence solicited.—Ernest J. Oslar, 1853 Marion St., Denver, Col.

Coleoptera.—Perfect specimens of *Alaudes singularis* Horn for exchange. Send lists to Dr. A. Fényes, Pasadena, Cal.

Lepidoptera.—I have a very large number of rare species of American butterflies in duplicate. Liberal exchange given for desiderata.—Dr. Henry Skinner, Acad. Nat. Sci., 1900 Race St., Phila., Pa.

Tettigidæ.—Specimens of this Orthopteran group wanted from any locality.—J. L. Hancock, 3148 Indiana Ave., Chicago, Ill.

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